



Spark Gap

Vol. 35, Issue 5, May 2019 *MARC - Serving Central Indiana Communities for thirty-five years*

On Our MARC:

Ladies and Gentleman, start your radio!!

May starts a summer of activities. We have the Dayton Hamfest in May, the Strawberry Fest and Field day in June. September brings the Heartnut Fest and the Radio Club yearly picnic. I hope everyone will get a chance to stop by to as many activities as possible.

Sad new in our Club. Joe Roger, KF9LQ, passed away on May 9, 2019. Joe was a Life Time member in our club. He was a Ham operator for 40 year. There will be no service for him but a celebration of life on May 19th at Northern Park Baptist Church located 598 North Meridian Street in Greenwood. Also, please keep your thoughts and prayers for The Rose family as Mike's wife, Ruth is receiving treatment again.

I would like to send a big thanks to Bob Jones for speaking last month on weather. It's always nice to have Bob speak after at our April meeting because he has new information from attending weather classes in March. Again, thanks Bob!

No speaker for this month since most people will be at Dayton. Hope everyone that will be attending Dayton has a great time. If you are not going to Dayton, hope to see you at the meeting on Saturday. Right now, we do have speaker for our June meeting. It will be Ken Barr and I can't tell you what he will be talking about as it is a surprise. Well, he hasn't said as he has a few items he would like to speak about.

Jacki, K16QOG

President





Birthdays for the month of May:

KC9GCH-Linda Harshbarger

N9AWM-Andrew Murrey

KU9V- Anthony Stokes

K9NTZ-Kevin Nuetzman

KA9QBF-Joseph Lovrini

KC9ZTM-Thomas Genera

Batteries and the Airlines

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Pilot Tom Mills, AF4NC, travels frequently to QRP operating and hiking locations around the world. He has completed the Appalachian Trail, the John Muir Trail and summited 11 peaks over 14,000 feet in Colorado. Mills uses an Elecraft KX-1 or KX-3 with a simple MFJ vertical antenna and a 12 V 7 Ah battery. He carries his gear in a Tamerack Expedition 10 camera backpack, which has enough padding, pockets, and external holders for two water bottles. It has plenty of room for accessories including the small antenna tuner and Begali key.

When traveling, some amateurs have simply purchased a new battery at their destination rather than deal with the perceived hassle of transporting a battery. (Using AAA or AA batteries is just not enough power if you are out for a few days).

Mills is often asked what kinds of batteries can be transported on a plane. After research, he has determined that non-spillable wet batteries (absorbed electrolyte) up to 12 V and 100 Watt-hours are permitted to be carried aboard planes. Absorbed electrolyte battery types include gel cells, AGM, etc. Batteries must be kept in a strong outer case with the terminals protected from shorting out with non-conductive caps, tape, etc. Mills says his 7 Ah batteries can be carried in "carry on" or checked baggage.

Passengers are limited to carrying two batteries. Watt/hours are calculated: 12 V times the rated capacity in Ah of the battery. In Mills' case, his battery is permissible on board: 12 X 7 is 84 watts, less than the 100 Watt-hours maximum permitted.

While the above is a Federal rule, the airlines *can* impose stricter rules. Mills has not had any problems with US air carriers, but a good precaution is to check with the carrier *before* leaving home. When traveling on foreign air carriers, check with them directly, but from what Mills has said, he has not heard of any problems.

Here is an FAA "pack safe" page that presents battery restrictions:

<https://www.faa.gov/hazmat/packsafe/>



This award will be presented to the Mid-State Amateur Radio at the May 18th meeting by Jimmy Merry, Jr. ARRL Indiana Section Manager. This in recognition of the MARC 35th Anniversary.



MIAMI CO HAMFEST

If you didn't make it to the Miami county hamfest recently you missed a very enjoyable experience. The April 27th hamfest drew hundreds of Amateur Radio operators from around the state to check out the great food, browse the flea market and participated in the three forums. The two day event is held at the Miami county 4-H fairgrounds just north of Peru.

Once you get past the Carmel roundabouts the trip up US31 is a nice country drive. The Miami county hamfest is sponsored by clubs in Cass, Grant, Howard and Miami counties. For five bucks you get a dry parking spot, a warm smile and a hearty "Welcome to the hamfest greeting". This growing event replaced the former Greentown hamfest near Kokomo. According to Miami ham club president, Bill-WD9GIU, organizers were forced to expand to a second building this year to accommodate additional requests for vendor space.

Two MARC members delivered a One-Two punch in the forums room. Jack-W8ISH and Ryan-AB9VM conducted two of the three forums. Jack spent an hour talking about the Basics of APRS. Ryan in his role as IDHS Communications Specialist wrapped up the event talking about disaster communications using WinLink software and HF radios. WinLink and APRS are merging digital message technologies to deliver a robust message system during disasters. Ryan told the standing room only crowd that Winlink proved very effective following the Puerto Rico hurricane recovery efforts. Jack and Ryan plan to hold additional training sessions on the use of WinLink for MARC members this summer or fall. Contact them if interested.

-Jack W8ISH *Photos by Bob-N9ISU*



Ryan-AB9VM WINLINK



Jack-W8ISH APRS

Getting loaded (antenna-wise, anyway)

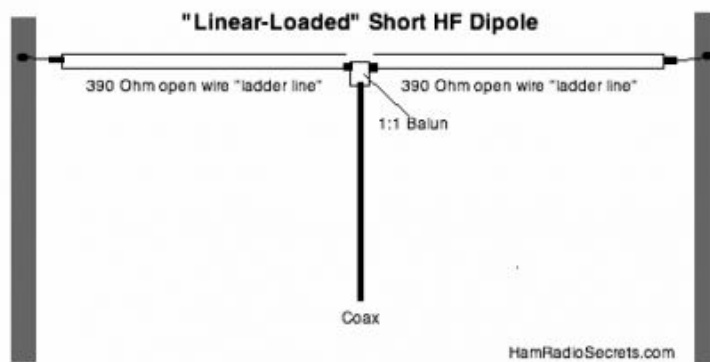
By Dan Romanchik, KB6NU

A couple of years ago, I home brewed a "Cobra" antenna (<https://www.kb6nu.com/yet-another-new-antenna-the-cobra/>). It's a doublet antenna, meaning that it consists of two elements connected to a center insulator, where it connects to a feed line. The unique thing about the Cobra antenna is that each element consists of three parallel conductors connected in series.

My antenna uses a lightweight, three-conductor rotor cable that used to be available from Radio Shack. The feedline is 450 Ω ladder line that connects to an antenna tuner to give me multi-band operation. Connecting the conductors in this way is supposed to provide "linear loading." Somehow, running the conductors in parallel is supposed to increase the antenna's effective length. My antenna is only 73-ft. long, but it easily tunes up on 80m.

The *ARRL Antenna Book* has a short section on linear loading. It says that linear loading is a "little understood" alternative to inductive loading that can be applied to almost any type of antenna. Furthermore, "...it introduces very little loss, does not degrade directivity patterns, and has low enough Q to allow reasonably good bandwidths."

As I mentioned, I've been using this antenna with good results for a little more than two years now. When I first put it up, someone mentioned the concept of linear loading to me, but not being an antenna guru, I didn't give it much thought. About a week ago, though, I ran across a link to the page Short Ham Antennas for HF (<https://www.hamradiosecrets.com/short-ham-antennas.html>). That got me thinking about the topic again.



This page describes a way to build a linearly-loaded dipole antenna with a feed point impedance of approximately 35 Ω . This allows you to feed it with coax instead of the ladder line that I use. The author uses 390 Ω ladder line for the elements. He says it's commonly available, but I don't think I've ever seen 390 Ω ladder line. You could probably use 450 Ω ladder line by adjusting the element lengths a little.

At that point, I started Googling. The next linear-loaded antenna design that I ran across is a design from M0PZT (<http://www.m0pzt.com/40m-linear-loaded-dipole/>). He built his elements from some sturdy wire and home-brewed spacers made from PVC pipe. He's used this design for the 40m elements of a fan dipole covering the 40m, 20m, 15m, and 12m bands. Only the 40m elements are linear-loaded. I also found a design for a linear loaded vertical antenna for 40m and 80m (<https://www.qsl.net/pa3hbb/ll.htm>). This antenna is only 7.736m, or 25.4 ft. tall. Of course, it requires

a good radial system to work well, but it will work a lot better for DX than a low doublet or dipole. Finally, there's an eHam discussion on linear loading (<https://www.eham.net/ehamforum/smf/index.php?topic=84418.0>). Unlike a lot of eHam discussions, this one is quite civil. It's worth reading if you're interested in the topic.

So, if you're thinking of getting loaded, error, I mean loading your antennas, here's a method for you to consider. It works!

When he's not trying to figure out which way current flows, Dan blogs about amateur radio at KB6NU.Com, teaches ham radio classes, and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him at cwgeek@kb6nu.com.

Hams Help Trace "Mystery" Signal Disrupting Keyless Entry Devices in Ohio

A recent article in *The New York Times* reported that many garage door openers and keyless vehicle entry fobs in an Ohio town near Cleveland mysteriously stopped working. While the article invoked *The X-Files* and hinted initially that a NASA research center might be involved, the cause was not so much mystifying as arcane.

"Garage door repair people, local ham radio enthusiasts, and other volunteer investigators descended on the neighborhood with various meters," the May 4 article by Heather Murphy recounted.

"Everyone agreed that something powerful was interfering with the radio frequency that many fobs rely on, but no one could identify the source."



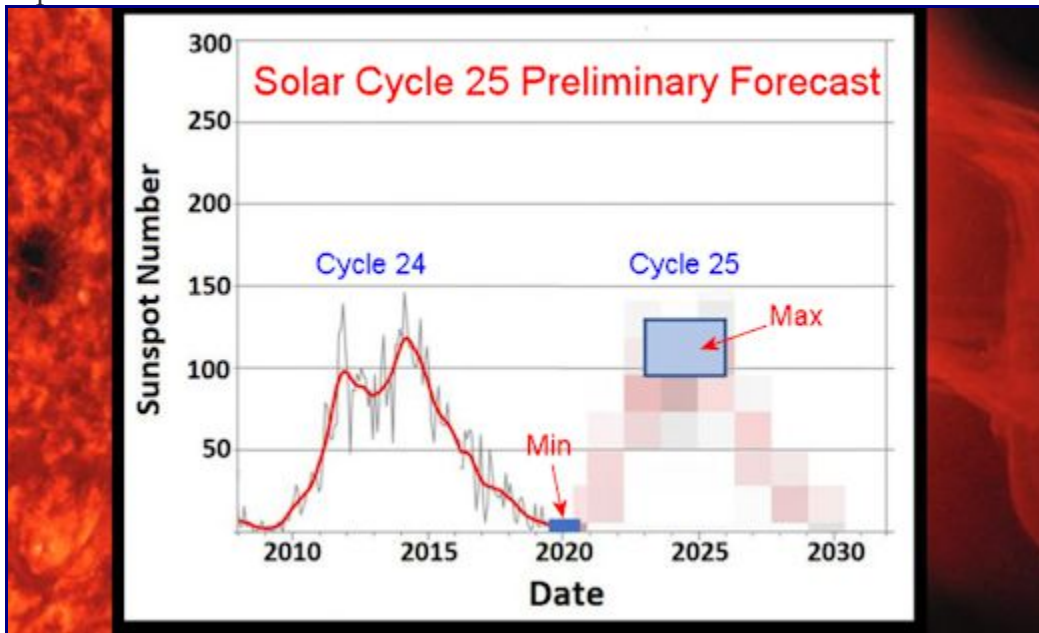
More than a dozen residents reported intermittent issues getting their key fobs and garage door openers to operate, and most lived within a few blocks of each other. At one point, the local power utility started shutting off power to areas where the strongest RF signal was detected, but the signal persisted. Dan Dalessandro, WB8ZQH, a TV repairer, was among several hams who investigated. He initially picked up "little blips" on a signal detector, but finally, on one block and at a particular house, the signal was quite loud.

"The source of the problem was a homebrew, battery-operated device designed by a local resident to alert him if someone was upstairs when he was working in his basement," the *Times* reported. "It did so by turning off a light." The inventor, not identified for privacy concerns, had no malicious intent nor any no inkling that his device was wreaking havoc on the neighborhood until a North Olmstead City Council member and a volunteer knocked on his door. The device operated on 315 MHz, the frequency many keyless-entry devices use under FCC Part 15 rules. The device's battery was removed, the signal stopped, and all who were involved breathed sighs of relief.

..... *ARRL Newsletter May 2019*

EXPERTS PREDICT A LONG, DEEP SOLAR MINIMUM: If you like solar minimum, good news: It could last for years. That was one of the predictions issued last week by an international panel of experts who gathered at NOAA's annual Space Weather Workshop to forecast the next solar cycle. If the panel is correct, already-low sunspot counts will reach a nadir sometime between July 2019 and Sept 2020, followed by a slow recovery toward a new Solar Maximum in 2023-2026.

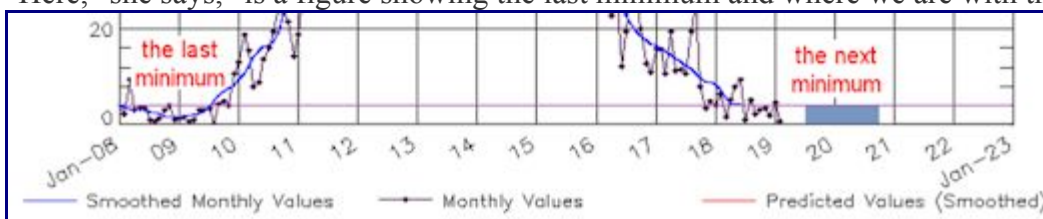
"We expect Solar Cycle 25 will be very similar to Cycle 24: another fairly weak maximum, preceded by a long, deep minimum," says panel co-chair Lisa Upton, a solar physicist with Space Systems Research Corp.



The solar cycle is like a pendulum, swinging back and forth between periods of high and low sunspot number every 11 years or so. Researchers have been tracking the cycle since it was discovered in the 19th century. Not all cycles are alike. Some are intense, with lots of sunspots and explosive solar flares; the Space Age began with a big booming solar maximum. Others are weak, such as the most recent, Solar Cycle 24, which peaked in 2012-2014 with relatively little action. Researchers are still learning to predict the ebb and flow of solar activity. Forecasting techniques range from physical models of the sun's inner magnetic dynamo to statistical methods akin to those used by stock market analysts.

"We assessed ~61 predictions in the following categories: Climatology, Dynamo, Machine Learning/Neural Networks, Precursor Methods, Spectral/Statistical Methods, Surface Flux Transport, and Other," says Upton. "The majority agreed that Solar Cycle 25 would be very similar to Solar Cycle 24."

"Here," she says, "is a figure showing the last minimum and where we are with the current minimum."



"As you can see – we haven't quite reached the lowest levels of the last cycle – where we experienced

several consecutive months with no sunspots. However, the panel expects that we should reach those levels [between now and the end of 2020]."

In recent years, the Internet has buzzed with the idea that a super-deep solar minimum such as the 70-year [Maunder Minimum](#) of the 17th century might cool the Earth, saving us from climate change.

That's not what the panel is saying, however.

"There is **no indication** that we are currently approaching a Maunder-type minimum in solar activity," says Upton. Solar minimum will be deep, but not *that deep*.

You don't see many of these rigs anymore:

Collins PROUDLY ANNOUNCES a NEW STANDARD in AM, CW and SSB OPERATION

It took Collins to produce the first really new Amateur communication system, designed expressly for Single Sideband as well as AM and CW operation. Collins new 75A-4 Receiver/32W-1 Exciter or 75A-4 Receiver/KWS-1 Transmitter combinations are designed for the most exacting Amateur. Engineering-wise, the equipment meets the high standards Collins has set for military and commercial equipment. Price-wise, the Amateur will get more for his money than ever before. See your nearest Collins distributor for your brochure.

KWS-1 TRANSMITTER

Collins engineering plus extensive on-the-air tests account for the KWS-1 Transmitter's reliability and optimum performance in SSB, AM and CW operation. The exciter and RF power amplifier are housed in a single receiver size cabinet. The Collins 367A-1 linear RF power amplifier uses two 4X150A's in class AB operation. RF feedback is employed to improve the linearity characteristics of the power amplifier. The KWS-1 incorporates circuit application and components which have been proved in preceding Collins equipment; to note a few, the 70E VFO, the Pi-L output network, extremely accurate VFO dial and the Collins Mechanical Filters. To meet the Amateur's future desire for power increase, Collins 32W-1 Exciter can be modified to a KWS-1 at the factory.



COLLINS RADIO COMPANY

Cedar Rapids, Iowa

261 Madison Avenue, NEW YORK 16

1930 Hi-Line Drive, DALLAS 2

2700 West Olive Avenue, BURBANK

Collins Radio Company of Canada Ltd.

74 Sparks Street, OTTAWA, ONTARIO



UP – COMING ACTIVITIES AND HAMFESTS

05/18/2019 -- 0800 MARC Monthly meeting at the Johnson County REMC.

Johnson County REMC 750 International Drive Franklin, IN 46131.

05/17,18 ,19/2019 – Dayton Hamvention, Greene County Fairgrounds and Expo Center in Xenia,OH

06/08/2019 -- White River Twp Fire Dept. annual Strawberry Festival

06/15/2019 -- 0800 MARC Monthly meeting at the Johnson County REMC.

06/29/2019 -- ARRL Field Day location TBA

07/20/2019 -- 0800 MARC Monthly meeting at the Johnson County REMC.

Johnson County REMC 750 International Drive Franklin, IN 46131.

08/17/2019 -- 0800 MARC Monthly meeting at the Johnson County REMC.

Johnson County REMC 750 International Drive Franklin, IN 46131.

08/24/2019 -- TBA, Greater Greenwood Community Band Festival Amphitheater, Surina Square Greenwood, IN 46142 (Public Safety and Parking)

09/14/2019 -- TBA Johnson County Heart Nut Festival

09/21/2019 -- MARC Monthly Meeting and Annual Picnic, location and time TBA.

10/19/2019 -- 0800 MARC Monthly meeting at the Johnson County REMC.

Johnson County REMC 750 International Drive Franklin, IN 46131.



If you would like to be part of Johnson County ARES please contact Bob LaGrange
N9SIU@YAHOO.COM



MID-SATE AMATEUR RADIO CLUB

The Mid-State Amateur Radio Club meets the **THIRD SATURDAY** of each month at the Johnson County REMC 750 International Drive Franklin, IN 46131.

See our website, www.midstatehams.org, for maps on how to get to our meeting.

Everyone is welcome; you do not have to be a *HAM* to attend our meetings or a member of the club.

WA9RDF Repeater:

146.835/
146.235 MHz
(151.4 Hz PL Tone)

Club Officers:

President: Jacki Frederick – KI6QOG
Vice President: Bill Jackson – KM6CRL
Secretary: Rhonda Curtis – WS9H
Treasurer: Ron Scheutz – K9THR
Repeater Trustee - Chris Frederick – KQ9Y

WA9RDF Repeater:

443.525/
448.525 MHz
(151.4 Hz PL Tone)

Weekly Net: Sunday evening 7:00 PM ARES/RACES members and ALL RADIO AMATEURS
146.835/146.235 MHz (151.4 Hz PL Tone)

The Official Newsletter of the Mid-State Amateur Radio Club

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Franklin, Indiana
46131

Spark Gap Editor: Robert LaGrange N9SIU

Please send your articles to my email: n9siu@yahoo.com no later than the 3rd of the month



Special thanks to Johnson County REMC for the use of their community room for meetings and testing.